

Class: Tuesday Thursday 12:00-1:15 in Braker 118
Office Hours: Tuesday 1:15-2:00 in Braker 114a

Primary Text (Required):

Wooldridge, *Introductory Econometrics*, 2nd Edition, Thomson South-Western, 2003

or

Wooldridge, *Introductory Econometrics*, 3rd Edition, Thomson South-Western, 2006.

Note: you will require access to the data sets made available in the on-line web site. These will be used for problem sets.

Supplemental Reference (Optional):

Wooldridge, *Econometric Analysis of Cross Section and Panel Data*, MIT Press.

Stata Documentation (Optional):

Hamilton, *Statistics with Stata (Updated for Version 8)*, Thomson Brooks/Cole, 2004

or

Hamilton, *Statistics with Stata (Updated for Version 9)*, Thomson Brooks/Cole, 2006.

The prerequisites for this course are statistics, matrix algebra, calculus, and most immediately EC 201.

The course is divided into three sections. First, we discuss the classical regression model, the workhorse model used throughout economics; we present the basic model and problems that can arise in using this model in practice. Second, we discuss likelihood modeling and simulation-based likelihood methods. Third, we discuss causal inference and program evaluation.

The course will be graded by problem sets (70%) and a midterm (30%)

The Classical Regression Model

Wooldridge, Chapters 4-9

An Introduction to Panel Data

Wooldridge, Chapters 13 and 14.

An Introduction to Maximum Likelihood: Limited Dependent Variable Models

Wooldridge, Chapter 17.

Causal Inference and Program Evaluation

Holland, P. (1986), "Statistics and Causal Inference" (with discussion), *Journal of the American Statistical Association*, 81, 945-970.

Rubin, D. (1974), "Estimating Causal Effects of Treatments in Randomized and Non-Randomized Studies," *Journal of Educational Psychology*, 66, 688-701.

Fisher, R.A. (1935), *The Design of Experiments*, Chapter 2, "The Principles of Experimentation, Illustrated by a Psycho-Physical Experiment".

Meyer, B., W.K. Viscusi, and D. Durbin (1995), "Worker' Compensation and Injury Duration: Evidence from a Natural Experiment," *American Economic Review*, Vol. 85, 322-40.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan, "How Much Should We Trust Differences-in-Differences Estimates?" NBER Working Paper No. 8841. Note: do not refer to the published version of this paper in the *QJE*.

Lee, David (2004), "Economic Impacts of New Unionization on Private Sector Employers: 1984-2001", with John DiNardo, Forthcoming in *Quarterly Journal of Economics* Working paper version: Economic Impacts of Unionization on Private Sector Employers: 1984-2001, NBER Working Paper #10598, July 2004.

Lalonde, Robert (1986), "Evaluating the Econometric Evaluation of Training Programs," *American Economic Review*, Vol. 76, 604-20.

Rosenbaum, P., and D. Rubin (1983), "The Central Role of the Propensity Score in Observational Studies for Causal Effects," *Biometrics*, 70 (1), 41-55.

Rosenbaum, P., and D. Rubin (1984), "Reducing Bias in Observational Studies Using Subclassification on the Propensity Score," *Journal of the American Statistical Association*, Vol. 79, 516-524.

Dehejia, Rajeev H. and Sadek Wahba (1999), "Causal Effects in Non-Experimental Studies: Re-Evaluating the Evaluation of Training Programs," *Journal of the American Statistical Association*, Volume 94, Number 448 (December 1999), pp. 1053-1062.

Imbens, Guido, and J. Angrist, "Identification and Estimation of Local Average Treatment Effects," *Econometrica*, Vol. 62, 467-75.

Angrist, J., G. Imbens, and D. Rubin, "Identification of Causal Effects Using Instrumental Variables" (with discussion), *Journal of the American Statistical Association*, 91, 444-72.

Likelihood Approaches: An Introduction to Bayesian Econometrics

Statistical decision theory and the role of Bayes rules.

Readings: Lecture notes 1 and 2.

The normal likelihood and classical regression. Posterior simulation. The Predictive Distribution.

Readings: Lecture note 3. Gelman, et al., chapters 2, 3, and 8.

Markov chain Monte Carlo: Gibbs sampling and data augmentation.

Readings: Lecture note 4.

The Tobit model. The probit model.

Chib, Siddhartha (1992). "Bayes Inference in the Tobit Censored Regression Model," *Journal of Econometrics*, 51, 79-99.

Albert, J. and S. Chib (1993). "Bayesian Analysis of Binary and Polychotomous Response Data," *Journal of the American Statistical Association*, 88, 669-679.

Panel data, random effects, and hierarchical models.

Readings: Lecture note 5. Gelman et al., chapter 13.

Dehejia, Rajeev H. (2000), "Was There a Riverside Miracle? A Framework for Evaluating Multi-Site Programs," National Bureau of Economic Research Working Paper No. 7844 (August 2000).